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THE

ONTARIO WATER RESOURCES

COMMISSION

WATER POLLUTION SURVEY

of the

VILLAGE OF FONTHILL

COUNTY OF WELLAND

September, 1965

VILLAGE OF FONTHILL - 1965
COUNTY OF WELLAND

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R E P O R T

ON A

WATER POLLUTION SURVEY

of the

VILLAGE OF FONTHILL

COUNTY OF WELLAND

Date of Survey: - September 23, 1965

Division of Sanitary Engineering

R E P O R T

ONTARIO WATER RESOURCES COMMISSION

INTRODUCTION

A water pollution survey was carried out in the Village of Fonthill on September 22 and 23, 1965. Such surveys are performed routinely and upon request in an effort to locate and evaluate domestic and industrial sources of pollution. This report includes the results of field examination of area watercourses and sewer outfalls; laboratory analyses of samples; a review of Commission files dealing with sewage and water works in the municipality; and interviews with various local officials.

I GENERAL

The Village of Fonthill is located in the County of Welland in the Twelve Mile Creek and Welland Canal watersheds. It is situated on the slope of a sandy ridge, which rises approximately 100 feet and affords drainage to the east and, to a lesser degree, to the north.

The village has a population of close to 2,700 according to local sources. Taxable assessment as per the 1965 Municipal Directory, is reported to be in excess of $4 million. Medium to high class residential development accounts for the greater portion of the village's assessment and there is virtually no industry within the municipality.

II WATER USES

1. Municipal Water Systems

The village obtains its water supply by means of two deep drilled wells situated in the northwest portion of the community and adjacent to the municipal park and playgrounds. The distribution system serves almost the entire population through 785 metered services. Average daily consumption is reported as 200,000 gallons, for a per capita consumption of 80 gallons. Maximum pumpage recorded for a single day is 600,000 gallons.

The supply is adequate and, on the basis of routine sampling, of satisfactory quality from a bacteriological standpoint. Chemically, the water displays moderate hardness and a natural fluoride concentration of 0.1 ppm. (Note: 1.0 ppm is considered to be the optimum concentration for the prevention of dental caries.) Total pumping capacity is 700 gpm and storage is provided in a 160,000-gallon standpipe. A spring-fed open reservoir is available for emergency use and is equipped with chlorination equipment.

2. Recreational Uses

While there are no significant natural watercourses within the village, a small spring-fed brook, a tributary of Twelve Mile Creek, rises in the northwest portion. This brook is dammed at the rear of an apartment project and the surrounding area is utilized as a private picnic park. There is no fishing or swimming at this site.

III WATER POLLUTION

1. Sanitary Waste Disposal

(a) Existing Conditions

The village has no municipal sanitary sewage works, leaving the disposal of domestic wastes to the individual property owner. Such disposal with one exception, consists of septic tanks and sub-surface tile beds.

The soil conditions, being largely sandy, are favourable for this method of waste disposal. However, a number of factors exist which have resulted in unsatisfactory conditions in the eastern section of the village. These are (i) topography, (ii) the lack of storm drainage works, (iii) the inadequacy of many disposal works and (iv) the construction of private drains. All four factors are inter-related.

Surface runoff from the newer residential streets and properties on the slope and top of the ridge tends to flow down grade to the east. There are no municipal storm drainage works to accommodate heavy flows experienced during rainfalls. The lower, or eastern, portion of the village is older and the private disposal works in many homes are incapable of dealing with the volume of wastes produced by modern conveniences, such as automatic washers. The difficulties experienced in the operation of these works as a result of the poor drainage conditions and their basic inadequacy, stimulated private action by property owners approximately 10 years ago. This action consisted of the construction of four tile drains

at the rear of properties on College Street, Emmett Street, and Cemetery Road. These drains, along with a drainage ditch originating in the business area, terminate at a ditch which parallels the Niagara, St. Catharines and Toronto Railway. This ditch in turn, drains to the east and eventually empties into the Welland Canal.

Surveys conducted by the Commission in 1957, 1962 and 1963, disclosed that domestic sewage was being discharged to the railway ditch from the various drains. Examination of the ditch on this occasion revealed conditions typical of domestic pollution. Samples were secured from the ditch for laboratory analysis. A thorough examination of street ditches in other sections of the village indicated that the pollution is confined largely to the one area.

(b) Proposed Sewage Works

As early as 1946, residents affected by poorly operating disposal systems and pollution in street ditches, felt the need for municipal action. A preliminary survey of the sewage works requirements was carried out in 1951 by C.R. Hagey, Consulting Engineer. The report of this study outlined a programme of construction of collector sewers and a treatment plant at a total cost of $245,000. No further action was taken.

The reports of Commission surveys in 1962 and 1963 recommended action by local officials to prevent the discharge of sewage to the railway ditch. This was followed in early 1964 by a meeting between the village council and senior members of the OWRC

staff, at which the council was urged to retain a consulting engineer for the purpose of preparing an up-to-date report on sewage works requirements. Such action was taken early this year and the report, by R.V. Anderson & Associates, was received in August.

The consulting engineer's report outlines an extensive programme of sanitary sewer construction and the development of an activated sludge sewage treatment plant. The cost of the initial stage of the scheme is estimated at $700,000. with a total cost for completion of the entire project in excess of $1,000,000. It is understood that the question of proceeding with the recommendations contained in the report will be placed on the ballot in the forthcoming municipal elections.

(c) Spring Valley Manor Apartments - Privately Owned Treatment Plant

In April of this year, Mr. Adam Schrier, a local resident, installed a package-type treatment plant to serve a 34-unit apartment project in the village. The treated effluent is discharged to the small brook noted earlier.

The treatment plant is inspected regularly by the staff of the Commission. Design capacity is 10,000 gpd and the present waste volume is 7,000 gpd. Recent inspections of the system indicate that the treatment efficiency of the unit was satisfactory. To date, no adverse effect on the receiving watercourse has been recorded.

2. Refuse Disposal

The village provides municipal refuse pick-up and maintains a disposal area in co-operation with the Township of Thorold. The

site is located 1.5 miles northeast of the village in a deep ravine. Sanitary landfill operations are practised and no danger of pollution of natural watercourses was evident.

3. Ground Water Pollution

While the municipal water supply has remained bacteriologically safe, the possibility of contamination, in the presence of large numbers of disposal beds, is an important factor. The location of the wells and the topography and geology of the surrounding area make the ground-water acquifer susceptible to pollution.

4. Discussion of Sample Analyses

Samples were taken from the railway ditch and submitted to the OWRC laboratory for analysis.

The results of various tests are as follows:

Sample Location	5-Day BOD (ppm)	Susp. Solids (ppm)	Total Solids (ppm)	Anionic Detergent as ABS	Coliforms per 100 ml
N. of College St.	14	96	398	1.7	1,400,000
N. of Cemetery Rd.	92	182	1136	43.0	45,000,000

Date of Sampling - September 23, 1965

The Biochemical Oxygen Demand (BOD) is an indication of the amount of oxygen required to stabilize the organic material in the sample. The Commission objective for streams and watercourses is a BOD of not more than 4.0 ppm.

The coliform organism is commonly found in the intestinal tract and is used as an indicator of pollution from a human or animal source.

The combination of a high BOD and an excessive coliform count is generally regarded as evidence of the presence of domestic sewage. These findings are consistent with those of previous surveys.

IV SUMMARY AND CONCLUSIONS

On the basis of visual evidence and the results of laboratory analyses, it is apparent that domestic sewage is being discharged to ditches in the eastern portion of the village. This condition has persisted for a considerable period of time and results from a combination of factors including the lack of storm drainage and the inadequacy of private disposal works. In the absence of a municipal sewage works such a condition can be expected to become more severe as further development takes place. The continued use of sub-surface disposal systems in large numbers not only contributes to the present health hazard but also poses a potential threat to the municipal water supply.

The development of a municipal sewage works programme must be considered to be the only permanent solution.

V RECOMMENDATION

It is recommended that the Village of Fonthill undertake the development of a sanitary sewage works scheme at the earliest possible date.

All of which is respectfully submitted.

Acting District Engineer: G.H. Mills
G.H. Mills

Approved by: _____
J.R. Barr, Director

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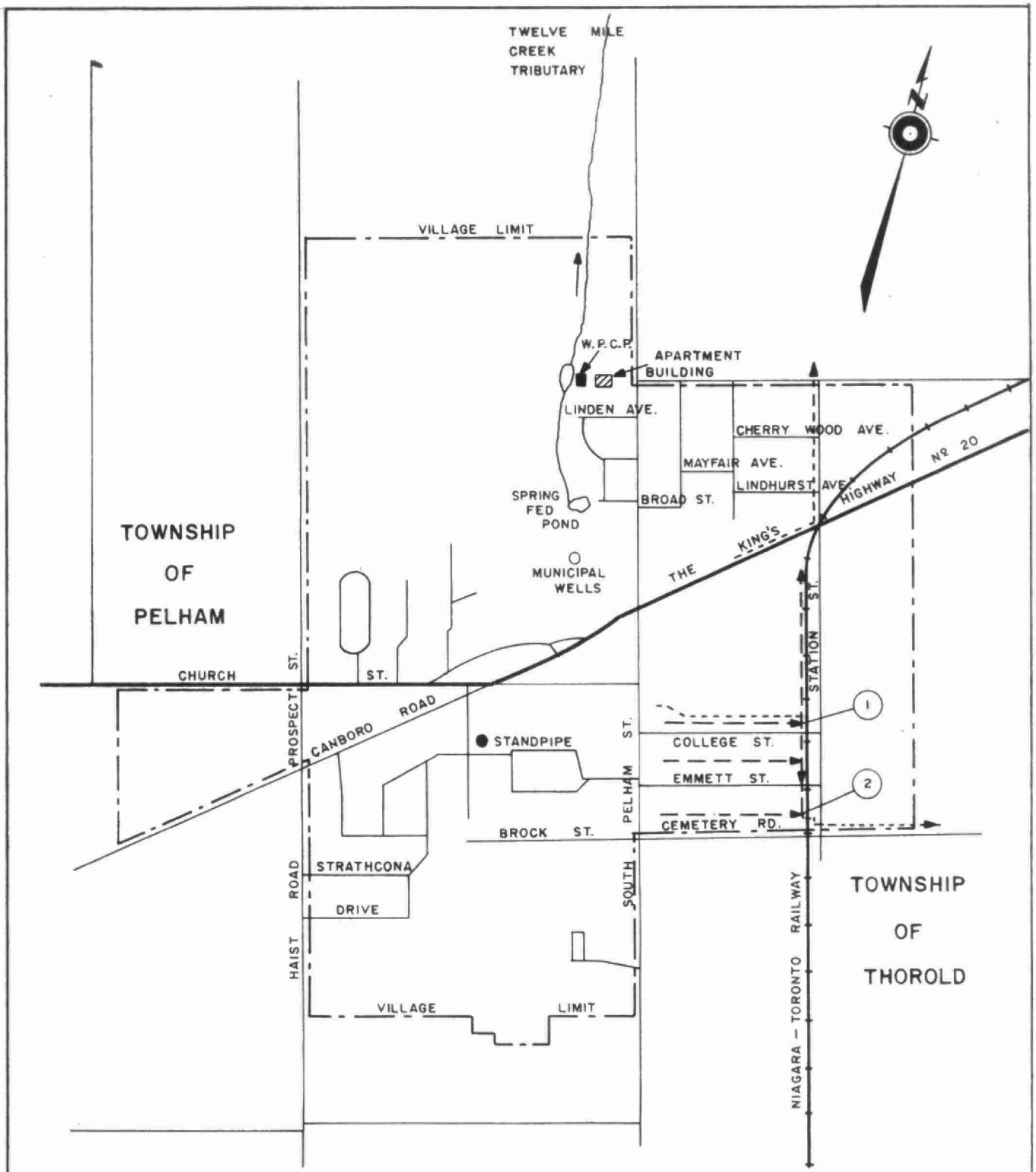

LEGEND

------ DRAIN OR DITCH

— — — TILED DRAIN

(2) SAMPLING POINTS

ONTARIO WATER RESOURCES COMMISSION

VILLAGE OF FONTHILL
WATER POLLUTION SURVEY

SCALE: 0 800 1600 FEET	
DRAWN BY: W.R.E.	DATE: OCTOBER 1965
CHECKED BY:	DRAWING No: 65-132